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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,590	03/22/2004	Tai-Cherng Yu		2228

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WEI TE CHUNG
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EXAMINER

RAYMOND, BRITTANY L

ART UNIT	PAPER NUMBER
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1756

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/806,590

Applicant(s)

YU ET AL.

Examiner

Brittany Raymond

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 3/22/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Objections

1. Claims 2-4 and 9-11 are objected to because of the following informalities: As to claims 2 and 9, the use of "formed" is incorrect and should be replaced with "forms." Regarding claims 3 and 10, the word "the" is missing between the words "comprising...steps." Also, "forming pattern in the resist film" should be replaced with "forming a pattern in the resist film." As to claims 4 and 11, the use of "two photo mask step" is confusing and may be replaced with "each photo mask step." Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3-8 and 10-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claims 3 and 10 are confusing because the phrase, "covering a resist film on the base plate" could have several meanings. It should be replaced with "covering the base plate with a resist film."

5. Claims 4 and 11 recite the limitation "two photo mask step" in line 2. There is insufficient antecedent basis for this limitation in the claims.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Andresakis (U.S. Patent 6606792).

Andresakis discloses a process for forming a printed circuit substrate comprising: depositing a layer of impedance material on a sheet of highly conductive material and then attaching the other side of the conductive material to a support, which forms a base plate (Column 6, Lines 54-57), applying a layer of photoresist on top of impedance layer (Column 6, Lines 58-59), exposing the photoresist layer to actinic radiation through a mask (Column 8, Lines 49-51), developing the photoresist to form a pattern (Column 8, Lines 61-62), etching the impedance material by contacting the material with an etchant and using the photoresist layer as a mask (Column 9, Lines 16-22), and removing the photoresist (Column 10, Lines 26-28), all of which are recited in claim 3 of the present invention. Andresakis also discloses that in another step, the support is removed from the conductive material and the process described above is performed on the back of the conductive material (Column 9, Lines 53-64), which shows there are a series of photo mask processes, as recited in claims 1 and 2 of the present invention.

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Since the process is being repeated at another position on the substrate, this is considered as an aligning step so that the etching step takes place in the correct position, as recited in claim 4 of the present invention. Andresakis discloses that the conductive material can be made of nickel (Column 6, Lines 61-63) and that the impedance material can comprise nickel or a nickel containing alloy (Column 7, Lines 4-5), as recited in claim 5 of the present invention. Andresakis also discloses that the photoresist film composition may include mixtures of o-quinone diazides with an aqueous alkali soluble binder resin (Column 7, Lines 60-62), which is an organic polymer mixed with a resist, as recited in claim 6 of the present invention. Andresakis states that the photoresist may be positive or negative working (Column 7, Line 38), as recited in claims 7 and 8 of the present invention.

Andresakis teaches every limitation of claims 1-8 and thus anticipates the claims.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
9. Claims 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andresakis (U.S. Patent 6606792) in view of Shu (U.S. Patent Application 2003/0207180).

The teachings of Andresakis have been discussed in paragraph 7 above.

Andresakis fails to disclose that each photo mask process forms narrower and deeper recesses in the same position of the former photo mask process in the base plate.

Shu discloses a dual damascene process in prior art comprising: providing a substrate (paragraph 0005), forming a dielectric layer and photoresist layer over the substrate (paragraph 0005), patterning the photoresist by a first photolithography process and using this as an etch mask for etching the dielectric layer (paragraph 0005), and forming a second photoresist pattern and using this as an etch mask for forming a second opening in the first opening (paragraph 0006), as recited in claim 9 of the present invention. It is apparent from Figures 1a-1c that the recesses become narrower and deeper for each photo mask process. Claims 10-15 are dependent on claim 9, but recite the same limitations as claims 3-8, which are discussed in paragraph 7 above.

It would have been obvious to one of ordinary skill in this art, at the time of invention by applicant, to have formed narrower and deeper recesses in the same position of the former photo mask process, as suggested by Shu, in the process of Andresakis because Shu teaches that this technique is possible when several photo

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mask processes are being performed on a substrate and it produces desirable features within the substrate.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brittany Raymond whose telephone number is 571-272-6545. The examiner can normally be reached on Monday through Friday, 8:00 a.m. - 4:30 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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KATHLEEN DUDA
PRIMARY EXAMINER